

Listing of Claims:

Claims 1 and 2 (Canceled).

3. (Currently Amended) The test system ~~for a mobile communication terminal,~~ according to claim [[2]] 4, wherein the radio-communication marker generating unit, as the predetermined number of radio-communication markers, between the mobile communication terminal and respective positions of the plurality of cells on the ordinate in the second coordinate, causes to display ~~capable of recognizing~~ an indication of at least one of down radio-communication from the mobile communication terminal to one of the cells and up radio-communication from one of the cells to the mobile communication terminal, and ~~capable of recognizing~~ an indication of the points in radio-communication time which correspond to the radio-communication time information along the abscissa which is a time base of the second coordinate.

4. (Currently Amended) ~~The~~ A test system for a mobile communication terminal ~~, according to claim 2,~~ comprising:
a test procedure control unit which executes a procedure for carrying out a transition test for a connection state of a mobile communication terminal of a cellular system, and which outputs

control information including time setting information in
accordance with the procedure;

_____ a transmission/reception unit which, in accordance with the
control information from the test procedure control unit,

10 generates a plurality of test signals including predetermined
messages corresponding to a plurality of cells in the cellular
system, and which varies the plurality of test signals in
accordance with a scheduled time passage to thereby transmit the
signals to the mobile communication terminal and receive response
15 signals including predetermined messages from the mobile
communication terminal;

_____ a reception measurement unit which measures time domain
waveforms of the response signals including the predetermined
messages from the mobile communication terminal;

20 _____ a message log acquiring unit which acquires and stores
messages and radio-communication time information when the
transmission/reception unit and the mobile communication terminal
exchange the respective predetermined messages;

_____ a display unit which displays measured results of the time
25 domain waveforms from the reception measurement unit and the
radio-communication time information from the message log
acquiring unit; and

_____ a display control unit which carries out processing for
receiving the measured results of the time domain waveforms from

30 the reception measurement unit and the radio-communication time
information from the message log acquiring unit, and for causing
to display graphs indicating the measured results of the time
domain waveforms and a predetermined number of radio-communication
markers indicating points in radio-communication time which
35 correspond to the radio-communication time information by a
graphic display capable of simultaneously comparing at both sides
of the same time base on the display unit;

wherein the display control unit includes:

a coordinate generating unit which divides a display
40 screen of the display unit into at least a first region and a
second region, and which causes to display a first coordinate
where the abscissa is time and the ordinate is power level at the
first region, and causes to display a second coordinate where the
abscissa is a time base which is the same as the abscissa of the
45 first coordinate and the ordinate is positions of the mobile
communication terminal and the plurality of cells at the second
region;

a data display control unit which causes to display the
graphs indicating the measured results of the time domain
50 waveforms at the first coordinate displayed by means of the
coordinate generating unit; and

a radio-communication marker generating unit which
causes to display a predetermined number of radio-communication

markers indicating points in radio-communication time which
55 correspond to the radio-communication time information along the
abscissa which is a time base of the second coordinate displayed
by means of the coordinate generating unit;

wherein the reception measurement unit has a function of
measuring a transition time that, in accordance with a response
60 signal from the mobile communication terminal, until it is
switched from a state in which the mobile communication terminal
receives a first test signal showing a greater strength at a
current point in time among the plurality of test signals to a
state in which the mobile communication terminal receives a
65 second test signal having a second greater strength among the
plurality of test signals accompanying that the plurality of test
signals are varied to be successively made to be a greater
strength in accordance with the scheduled time passage,

wherein the test system ~~for a mobile communication terminal~~
70 further comprises a determining unit which, upon receiving the
measured results of the transition time from the reception
measurement unit, carries out success/failure determination as to
whether a transition has been a success or a failure in which the
mobile communication terminal switches from a state of receiving
75 the first test signal to a state of receiving the second test
signal among the plurality of test signals corresponding to the

plurality of cells in accordance with the control information from the test procedure control unit, and

80 wherein the data display control unit causes to display
~~capable of recognizing~~ an indication of a success/failure as a
result of the success/failure determination by the determining
unit together with a corresponding radio-communication marker
among the predetermined number of radio-communication markers
displayed by means of the radio-communication marker generating
85 unit.

5 5. (Currently Amended) The test system ~~for a mobile~~
~~communication terminal,~~ according to claim [[2]] 4, wherein the
data display control unit causes to display ~~capable of~~
~~recognizing~~ an indication of states from a start up to a time of
5 responding at a point in time when a scheduled response is
completed, accompanying a display of the corresponding
radio-communication marker among the predetermined number of
radio-communication markers displayed by means of the
radio-communication marker generating unit, at least one of the
10 first and second coordinates along the abscissa which is a time
base of the first and second coordinates displayed by means of
the coordinate generating unit.

6. (Currently Amended) The test system ~~for a mobile communication terminal~~, according to claim [[2]] 4, wherein the message log acquiring unit comprises a storage unit which acquires and analyzes message information when the transmission/reception unit and the mobile communication terminal exchange the respective predetermined messages, thereby storing at least a part of or a text of the message information so as to be read, and

wherein the display control unit ~~has~~ includes:

a designation marker generating unit which generates a designation marker that moves in accordance with a selective designation of an operator along the abscissa which is a time base of the second coordinate displayed by means of the coordinate generating unit, and causes to display at least one of the predetermined number of radio-communication markers displayed by means of the radio-communication marker generating unit; and

a message display control unit which, when a specific radio-communication marker among the predetermined number of radio-communication markers is designated by the designation marker displayed by means of the designation marker generating unit, reads out at least a part of or a text of message information corresponding to the specific radio-communication marker from the storage unit of the message acquiring unit and causes to display it on the display unit.

7. (Currently Amended) The test system ~~for a mobile communication terminal~~, according to claim [[1]] 4, wherein the reception measurement unit includes a spectrum analyzer having a function of analyzing and measuring a response signal from the mobile communication terminal at a time domain.

8. (Currently Amended) The test system ~~for a mobile communication terminal~~, according to claim [[2]] 4, wherein the test procedure control unit ~~has~~ comprises a computer and a computer readable medium having stored thereon computer readable program code means for causing the computer to carry out a transition test for a connection state of the mobile communication terminal of the cellular system, and ~~outputs to~~ output control information including time setting information in accordance with the computer readable program code means.

9. (Currently Amended) The test system ~~for a mobile communication terminal~~, according to claim 8, wherein the determining unit, the message log acquiring unit, and the display control unit are organized together with the test procedure control unit as ~~software~~ operating units of the computer.

10. (Currently Amended) The test system ~~for a mobile communication terminal~~, according to claim 9, wherein the computer readable ~~program code means~~ medium has stored thereon:

5 first computer readable program code means for causing the transmission/reception unit to generate a plurality of test signals including predetermined messages corresponding to a plurality of cells in the cellular system in accordance with the control information from the test procedure control unit, and to vary the plurality of test signals in accordance with a scheduled
10 time passage to thereby transmit the signals to the mobile communication terminal and receive response signals including the predetermined messages from the mobile communication terminal;

second computer readable program code means for causing the reception measurement unit to measure time domain waveforms of
15 the response signals including the predetermined messages from the mobile communication terminal;

third computer readable program code means for causing the message log acquiring unit to acquire and store messages and the radio-communication time information when the transmission/
20 reception unit and the mobile communication terminal exchange the respective predetermined messages;

fourth computer readable program code means for causing the display unit to display measured results of the time domain waveforms from the reception measurement unit and the

25 radio-communication time information from the message log
acquiring unit; and

fifth computer readable program code means for causing the
display control unit to carry out processing for receiving the
measured results of the time domain waveforms from the reception
30 measurement unit and the radio-communication time information
from the message log acquiring unit, and to display graphs
indicating the measured results of the time domain waveforms and
a predetermined number of radio-communication markers indicating
points in radio-communication time which correspond to the
35 radio-communication time information by a graphic display capable
of simultaneously comparing at both sides on the same time base
on the display unit.

11. (Currently Amended) The test system ~~for a mobile~~
~~communication terminal~~, according to claim 10, wherein the
computer readable ~~program code means~~ medium further has stored
thereon:

5 sixth computer readable program code means for causing the
coordinate generating unit to divide a display screen of the
display unit into at least a first region and a second region,
and to display a first coordinate where the abscissa is time and
the ordinate is power level on the first region, and a second
10 coordinate where the abscissa is a time base which is the same as

the abscissa of the first coordinate and the ordinate is
respective positions of the mobile communication terminal and the
plurality of cells on the second region;

seventh computer readable program code means for causing the
15 data display control unit to display the graphs indicating the
measured results of the time domain waveforms at the first
coordinate displayed by means of the coordinate generating unit;
and

eighth computer readable program code means for causing the
20 radio-communication marker generating unit to display the
predetermined number of radio-communication markers indicating
points in radio-communication time which correspond to the
radio-communication time information along the abscissa which is
a time base of the second coordinate displayed by means of the
25 coordinate generating unit.

12. (Currently Amended) The test system ~~for a mobile~~
~~communication terminal~~, according to claim 11, wherein the
computer readable ~~program code means~~ medium further has stored
thereon:

5 ninth computer readable program code means for causing the
radio-communication marker generating unit to display, as the
predetermined number of radio-communication markers, between the
respective positions of the mobile communication terminal and the

plurality of cells at the second coordinate, ~~capable of~~
10 ~~recognizing an indication of~~ at least one of down radio-
communication from the mobile communication terminal to one of
the cells and up radio-communication from one of the cells to the
mobile communication terminal, and ~~capable of recognizing an~~
indication of the points in radio-communication time which
15 correspond to the radio-communication time information along the
abscissa which is a time base of the second coordinate.

13. (Currently Amended) The test system ~~for a mobile~~
~~communication terminal~~, according to claim 12, wherein the
computer readable ~~program code means~~ medium further has stored
thereon:

5 tenth computer readable program code means for causing the
reception measurement unit to, in accordance with a response
signal from the mobile communication terminal, measure a
transition time that until it is switched from a state in which
the mobile communication terminal receives a first test signal
10 showing a greater strength at a current point in time among the
plurality of test signals to a state in which the mobile
communication terminal receives a second test signal having a
second greater strength among the plurality of test signals
accompanying that the plurality of test signals are varied to be

15 successively made to be a greater strength in accordance with the
scheduled time passage;

eleventh computer readable program code means for causing a
determining unit to, upon receiving the measured results of the
transition time from the reception measurement unit, carry out
20 success/failure determination as to whether a transition has been
a success or a failure in which the mobile communication terminal
is switched from a state of receiving the first test signal among
the plurality of test signals corresponding to the plurality of
cells to a state of receiving the second test signal in
25 accordance with the control information from the test procedure
control unit; and

twelfth computer readable program code means for causing the
data display control unit to display ~~capable of recognizing~~ an
indication of a success/failure as a result of the
30 success/failure determination by the determining unit together
with a corresponding radio-communication marker among the
predetermined number of radio-communication markers displayed by
means of the radio-communication marker generating unit.

14. (Currently Amended) The test system ~~for a mobile~~
~~communication terminal~~, according to claim 13, wherein the
computer readable ~~program code means~~ medium further has stored
thereon:

5 thirteenth computer readable program code means for causing
the data display control unit to display ~~capable of recognizing~~
an indication of states from a start up to a time of responding
at a point in time when a scheduled response is completed,
accompanying the display of a corresponding radio-communication
10 marker among the predetermined number of radio-communication
markers displayed by means of the radio-communication marker
generating unit, at least one of the first and second coordinates
along the abscissa which is a time base of the first and second
coordinates displayed by means of the coordinate generating unit.

15. (Currently Amended) The test system ~~for a mobile~~
~~communication terminal~~, according to claim 14, wherein the
computer readable ~~program code means~~ medium further has stored
thereon:

5 fourteenth computer readable program code means for causing
the storage unit of the message log acquiring unit to acquire and
analyze message information when the transmission/reception unit
and the mobile communication terminal exchange the respective
predetermined messages, thereby storing at least a part of or a
10 text of the message information to be read.

16. (Currently Amended) The test system ~~for a mobile~~
~~communication terminal~~, according to claim 15, wherein the

computer readable ~~program code means~~ medium further has stored thereon:

5 fifteenth computer readable program code means for causing
the designation marker generating unit of the display control
unit to move in accordance with a selective designation by an
operator along the abscissa which is a time base of the second
coordinate displayed by means of the coordinate generating unit,
10 and generate a designation marker identifying at least one of the
predetermined number of radio-communication markers displayed by
means of the radio-communication marker generating unit to be
designated; and

 sixteenth computer readable program code means for causing
15 the message display control unit of the display control unit to,
when a specific radio-communication marker among the
predetermined number of radio-communication markers is designated
by the designation marker displayed by means of the designation
marker generating unit, read out at least a part of or a text of
20 the message information corresponding to the specific
radio-communication marker from the message acquiring unit, and
to display it on the display unit.

Claims 17-22 (Canceled).

23. (Currently Amended) ~~The~~ A test method for a mobile communication terminal ~~, according to claim 22,~~ comprising:

operating a test procedure control unit to execute a procedure for carrying out a transition test for a connection state of a mobile communication terminal of a cellular system, and outputting control information including time setting information in accordance with the procedure from the test procedure control unit;

operating a transmission/reception unit, in accordance with the control information from the test procedure control unit, to generate a plurality of test signals including predetermined messages corresponding to a plurality of cells in the cellular system, and vary the plurality of test signals in accordance with a scheduled time passage to thereby transmit the signals to the mobile communication terminal and receive a response signal including a predetermined message from the mobile communication terminal in the transmission/reception unit;

operating a reception measurement unit to measure a time domain waveform of the response signal including the predetermined message from the mobile communication terminal in the reception measurement unit;

operating a message log acquiring unit to acquire and store messages and radio-communication time information when the transmission/reception unit and the mobile communication terminal

25 exchange respective messages by means of the message log
acquiring unit;
 operating a display unit to display measured results of the
time domain waveforms from the reception measurement unit, and
the radio-communication time information from the message log
30 acquiring unit; and
 operating a display control unit to carry out processing for
receiving the measured results of the time domain waveforms from
the reception measurement unit and the radio-communication time
information from the message log acquiring unit, and for causing
35 to display graphs indicating the measured results of the time
domain waveforms and a predetermined number of radio-communication
markers indicating points in radio-communication time which
correspond to the radio-communication time information by a
graphic display capable of simultaneously comparing at both sides
40 of the same time base on the display unit by means of the display
control unit;
 wherein the test procedure control unit comprises a computer
and a computer readable medium having stored thereon a computer
readable program code means for causing the computer to carry out
45 a transition test for a connection state of the mobile
communication terminal of the cellular system, and to output
control information including time setting information in
accordance with the computer readable program code means;

wherein the message log acquiring unit and the display
50 control unit are organized together with the test procedure
control unit as operating units of the computer; and
wherein the computer readable medium has stored
thereon:

first computer readable program code means for causing the
55 transmission/reception unit to, in accordance with the control
information from the test procedure control unit, generate a
plurality of test signals including predetermined messages
corresponding to the plurality of cells in the cellular system,
and vary the plurality of test signals in accordance with a
60 scheduled time passage to thereby transmit the signals to the
mobile communication terminal and receive response signals
including the predetermined messages from the mobile
communication terminal;

second computer readable program code means for causing the
65 reception measurement unit to measure time domain waveforms of
the response signals including the predetermined messages from
the mobile communication terminal;

third computer readable program code means for causing the
message log acquiring unit to acquire and store messages and
70 radio-communication time information when the transmission/
reception unit and the mobile communication terminal exchange the
respective predetermined messages;

fourth computer readable program code means for causing the display unit to display measured results of the time domain waveforms from the reception measurement unit and the radio-communication time information from the message log acquiring unit;

fifth computer readable program code means for causing the display control unit to carry out processing for receiving the measured results of the time domain waveforms from the reception measurement unit and the radio-communication time information from the message log acquiring unit, and for causing to display graphs indicating the measured results of the time domain waveforms and a predetermined number of radio-communication markers indicating points in radio-communication time which correspond to the radio-communication time information by a graphic display capable of simultaneously comparing at both sides on the same time base on the display unit;

sixth computer readable program code means for causing a coordinate generating unit of the display control unit to divide a display screen of the display unit into at least a first region and a second region, and to display a first coordinate where the abscissa is time and the ordinate is power level on the first region, and a second coordinate where the abscissa is a time base which is the same as the abscissa of the first coordinate and the

ordinate is respective positions of the mobile communication terminal and the plurality of cells on the second region;

seventh computer readable program code means for causing a data display control unit of the display control unit to display graphs indicating the measured results of the time domain waveforms at the first coordinate displayed by means of the coordinate generating unit;

eighth computer readable program code means for causing a radio-communication marker generating unit of the display control unit to display a predetermined number of radio-communication markers indicating points in radio-communication time which correspond to the radio-communication time information along the abscissa which is a time base of the second coordinate displayed by means of the coordinate generating unit;

ninth computer readable program code means for causing the radio-communication marker generating unit of the display control unit to display an indication of, as the predetermined number of radio-communication markers, between the respective positions of the mobile communication terminal and the plurality of cells on the ordinate at the second coordinate, at least one of down radio-communication from the mobile communication terminal to one of the cells and up radio-communication from one of the cells to the mobile communication terminal, and an indication of the points in radio-communication time which correspond to the

120 radio-communication time information along the abscissa which is
a time base of the second coordinate;

_____tenth computer readable program code means for causing the
reception measurement unit to, in accordance with the response
signals from the mobile communication terminal, measure a
125 transition time that until it is switched from a state in which
the mobile communication terminal receives a first test signal
showing a greater strength at a current point in time among the
plurality of test signals to a state in which the mobile
communication terminal receives a second test signal having a
130 second greater strength among the plurality of test signals
accompanying that the plurality of test signals are varied to be
successively made to be a greater strength in accordance with the
scheduled time passage;

eleventh computer readable program code means for causing
135 the determining unit to, upon receiving the measured results of
the transition time from the reception measurement unit, carry
out success/failure determination as to whether a transition has
been a success or a failure in which the mobile communication
terminal is switched from a state of receiving the first test
140 signal among the plurality of test signals corresponding to the
plurality of cells to a state of receiving the second test signal
in accordance with the control information from the test
procedure control unit; and

twelfth computer readable program code means for causing the
145 data display control unit of the display control unit to display
~~capable of recognizing~~ an indication of a success/failure as the
result of the success/failure determination by the determining
unit together with a corresponding radio-communication marker
among the predetermined number of radio-communication markers
150 displayed by means of the radio-communication marker generating
unit.

24. (Currently Amended) The test method ~~for a mobile~~
~~communication terminal~~, according to claim 23, wherein the
computer readable ~~program code means~~ medium further has stored
thereon:

5 thirteenth computer readable program code means for causing
the data display control unit to display ~~capable of recognizing~~
an indication of states from a start up to a time of responding
at a point in time when a scheduled response is completed,
accompanying the display of a corresponding radio-communication
10 marker among the predetermined number of radio-communication
markers displayed by means of the radio-communication marker
generating unit, at least one of the first and second coordinates
along the abscissa which is a time base of the first and second
coordinates displayed by means of the coordinate generating unit.

25. (Currently Amended) The test method ~~for a mobile communication terminal~~, according to claim 24, wherein the computer readable ~~program code means~~ medium further has stored thereon:

5 fourteenth computer readable program code means for causing the storage unit of the message log acquiring unit to acquire and analyze message information when the transmission/reception unit and the mobile communication terminal exchange the respective predetermined messages, thereby storing at least a part of or a
10 text of the message information to be read.

26. (Currently Amended) The test method ~~for a mobile communication terminal~~, according to claim 25, wherein the computer readable ~~program code means~~ medium further has stored thereon:

5 fifteenth computer readable program code means for causing the designation marker generating unit of the display control unit to move in accordance with a selective designation by an operator along the abscissa which is a time base of the second coordinate displayed by means of the coordinate generating unit,
10 and to generate a designation marker identifying at least one of the predetermined number of radio-communication markers displayed by means of the radio-communication marker generating unit to be designated; and

sixteenth computer readable program code means for causing
15 the message display control unit of the display control unit to,
when a specific radio-communication marker among the
predetermined number of radio-communication markers is designated
by the designation marker displayed by the designation marker
generating unit, read out at least a part of or a text of the
20 message information corresponding to the specific
radio-communication marker from the message acquiring unit, and
to display it on the display unit.